**Project Team:** Processing Low-Priority Chlamydia and Gonorrhea Reports
**Timeline:**

**SOLVE**

**What is the Gap?**
1. Starting Point
2. Vision
3. Current State

**What is the Goal for Improvement?**
4. Goal or Target Condition
5. Customers & Beneficiaries
6. Benefit
7. Measures & Targets
8. Conditions

**What is the Approach?**
9. Team Members & Roles
10. Project Schedule
11a. Data and Information Collection

**What are your Conclusions?**
13. Improvement Hypotheses & Problem Solving Summary

**SOLVE**

**Understanding the Problems:**
11b. Current and Future State Process Maps
12. Cause and Effect Diagram

**TRY, LEARN, INSTALL**

**Try Solutions; what did you learn?**
14. Construct & Execute tests
15. Document Results
16. Analyze Results & Extract Learning

**How will you make the new way happen?**
17. Plan Rollout & Execute
18. Measures of Success

## SOLVE

### 1. Starting Point

**a. What is the need (e.g. outcome) or gap that caused this project to be considered in the first place?**

The current backlog of low-priority chlamydia (CT) and gonorrhea (GC) reports is approximately 3 months. The Centers for Disease Control & Prevention (CDC) guidelines state low-priority chlamydia and gonorrhea cases should be processed within 30 days of receipt. The Chicago Department of Public Health (CDPH) is not meeting this guideline, resulting in staff going into an "all hands on deck mode" in the first quarter to get all low-priority CT and GC processed from the prior year, and further perpetuating the cycle.

**b. Who is establishing the need?**

STI Surveillance Program, CDC, Illinois Department of Public Health (IDPH)

**c. How is the need being measured and is it possible for this project to make an impact on that measure?**

Number of incoming low-priority GC and CT reports (monthly)
Number of low-priority GC and CT reports entered by type (duplicate, update, new; daily)
Number of low-priority GC and CT reports entered (monthly)
Number of low-priority GC and CT reports waiting to be entered (monthly)
Time studies of data entry by type of report (average and range)
Backlog time of low-priority GC and CT reports (weekly)

*Project can impact all but first measure.*

**d. What data or analysis was used to establish that this project will make a key impact?**

Program performance data captured from the Illinois National Electronic Disease Surveillance System (INEDSS) Business Objects reports, time studies performed by Program Director, tracking spreadsheet for Senior Data Entry Operators (Sr. DEOs), Access database on data entry accuracy

**e. What scope (e.g. geographic, organization, customer) are you expected to impact?**

This project will immediately impact STI Surveillance Program staff from CDPH, and ultimately, healthcare providers (approximately 960 providers reported GC and CT to CDPH in 2012) and Chicago residents (2,695,598 as of 2010 Census). Although this project is within only one programmatic area within the Department, it could potentially serve as a model for other surveillance programs at CDPH.

**f. What conditions are being placed on this project?**

- Must adhere to collective bargaining agreements;
- No monetary resources available;
- Data entry and case closure must be performed in INEDSS; and
- INEDSS cannot be changed by CDPH.

## 2. Vision (What do you want to achieve in the long range and without any restrictions? *Generate a picture or description of your ideal condition.* How will it look for the customers, our team, and for the taxpayers/funding sources?)

Keep up with the incoming volume of low-priority CT and GC reports thereby minimizing the backlog in order to eliminate the first quarter "all hands on deck" mode so non-data entry staff can focus on disease control, prevention and surveillance activities.

## 3. Current State (Description of how the process and organization is operating now; Quantitative if possible, always factual and based on observation)

| Stakeholder | Description | How do you know? *(Data if available)* |
|---|---|---|
| Customers | • Backlog time exceeds CDC guidelines<br>• CDPH is unable to provide timely feedback to healthcare providers regarding their meeting reporting deadlines, quality of morbidity reports, treatment recommendations, etc.<br>• CDPH is unable to provide more regular reports on CT and GC | • Backlog time is 86 days as of 2/21/14<br>• Only issue annual reports |
| Financial | • Non-data entry staff performing data entry | • INEDSS identifies who "touches" each case |
| Your Team | • Data entry staff unable to keep up with incoming low-priority GC and CT reports (morbidity, laboratory and closures) | • Backlog is currently 5,880 paper morbidity and laboratory reports, and 11,346 cases awaiting closure in INEDSS (2.21.2014) |

## 4. Goal or Target Condition (What is the objective? Which piece of the gap are you addressing?)

TO: Reduce the backlog time of low-priority CT and GC report receipt to closure in INEDSS from 86 days to 30 days.

## 5. Customers and Beneficiaries (Who benefits from achieving the goal? What populations are targeted?)

- STI Surveillance Program staff
- Healthcare providers
- Public health stakeholders
- Chicago residents

## 6. Benefit (What are the benefits from achieving the goal?)

SO THAT:

- Non-data entry staff do not have to process low-priority CT and GC reports in the first quarter;
- Disease Investigation Specialists (DIS) can provide better and more timely feedback to healthcare providers regarding reporting and treatment adequacy;
- Epidemiologists can perform more timely surveillance and publish quarterly reports for public health stakeholders;
- STI Surveillance Staff can detect and prevent outbreaks more quickly; and
- Chicago residents can have improved outcomes and decreased transmission related to GC and CT treatment adequacy and targeted interventions.

## 7. Measures and Targets (What quantitatively will be achieved?)

| Beneficiaries | What Measured | How Measured | Target | | |
|---|---|---|---|---|---|
| | | | How Much | By When | Actual |
| 1. STI Surveillance Program staff<br>2. Healthcare providers<br>3. Chicago residents | Backlog time | Difference between date of receipt of low-priority GC or CT report to closed in INEDSS (using the furthest date out in the batch) | 30 days or less (decrease of 65%) | June 2014 | 77 days (10%) |

## 8. Conditions (What do you need to be successful?)

- Data entry quality must be maintained.

## 9. Team Members and Roles (Who is directly involved and How? Training Needs?)

| Name | Role | Work process related interests/concerns | Project Expectations | Project, QI skills |
|---|---|---|---|---|
| Kirsti Bocskay | QI Leader, Epidemiologist IV | Quality improvement | Learn how to run a kaizen event | Lean Six Sigma, PDSA, Kaizen |
| Jeanette Kowalik | Process Owner, Program Director | Meet CDC guidelines for processing GC and CT reports | Backlog time reduced to 30 days or less | |
| Sandra Tilmon | Epidemiologist II | STI Surveillance Program | | PDSA |
| Karen Canada | Sr. DEO | STI Surveillance Program | | |
| Joanne Davenport | Sr. DEO | STI Surveillance Program | | |
| Alison Scott | Sr. DEO | STI Surveillance Program | | |
| Karin Hearan | Sr. DEO | Wild Card (CD Pgm) | | |
| Kingsley Weaver | Epidemiologist III | Wild Card (CD Pgm) | | PDSA |

*Training Needs:*

Working with Others, Introduction to Kaizen and QI, Value and Waste

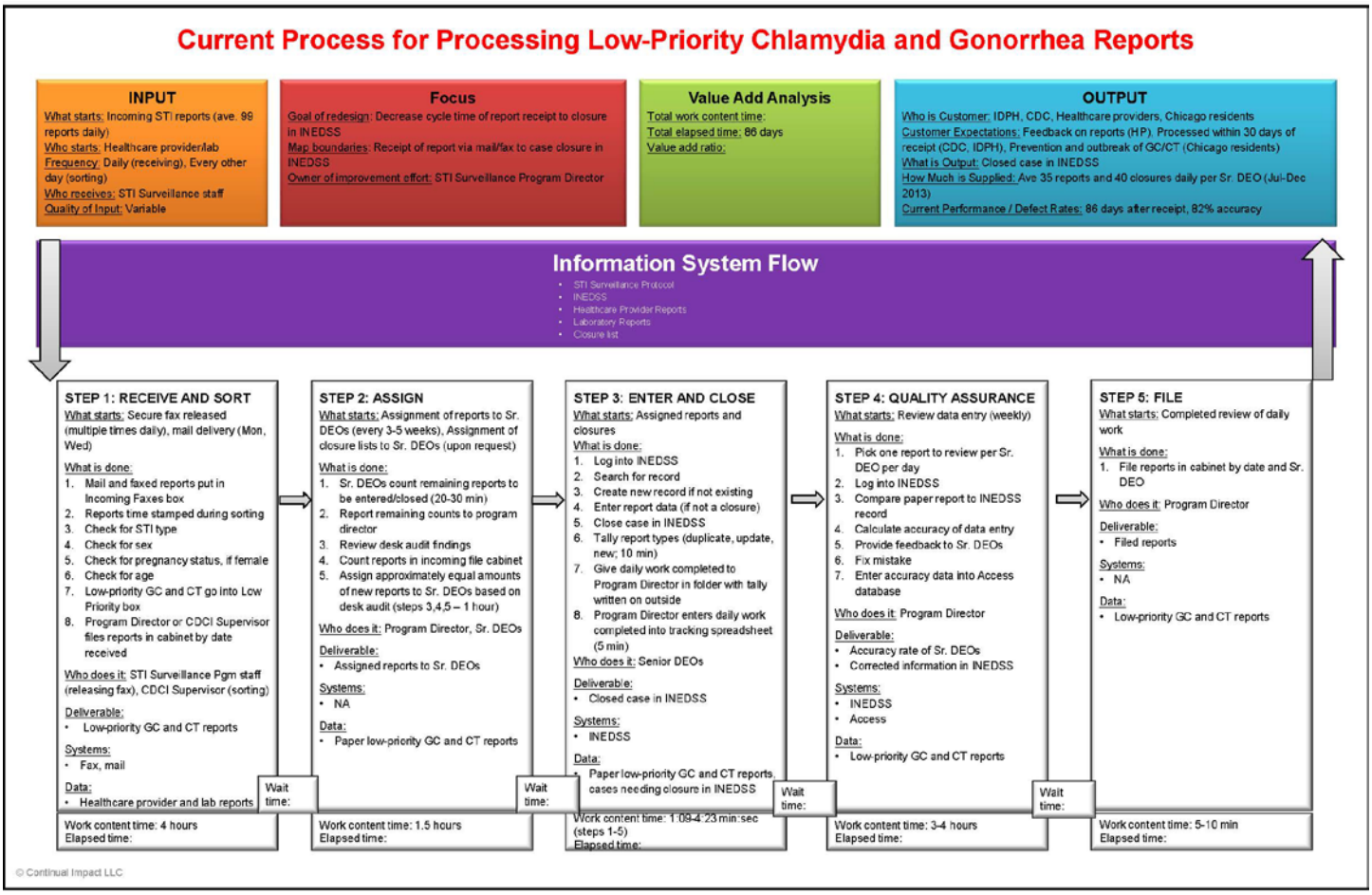
## 10. Project Schedule (Activities to go about solving the problem)

- Kaizen Event: Feb 24-28, 2014

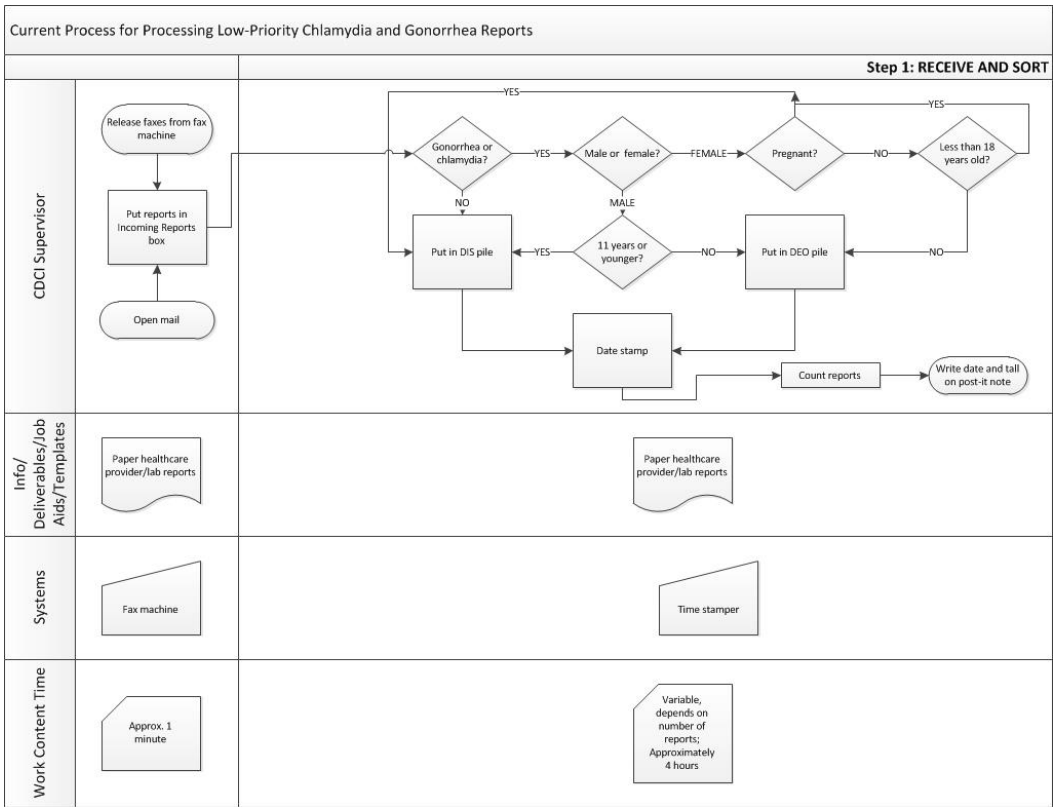
## 11a. Data and Information Collection (What will you collect? Who? When?)

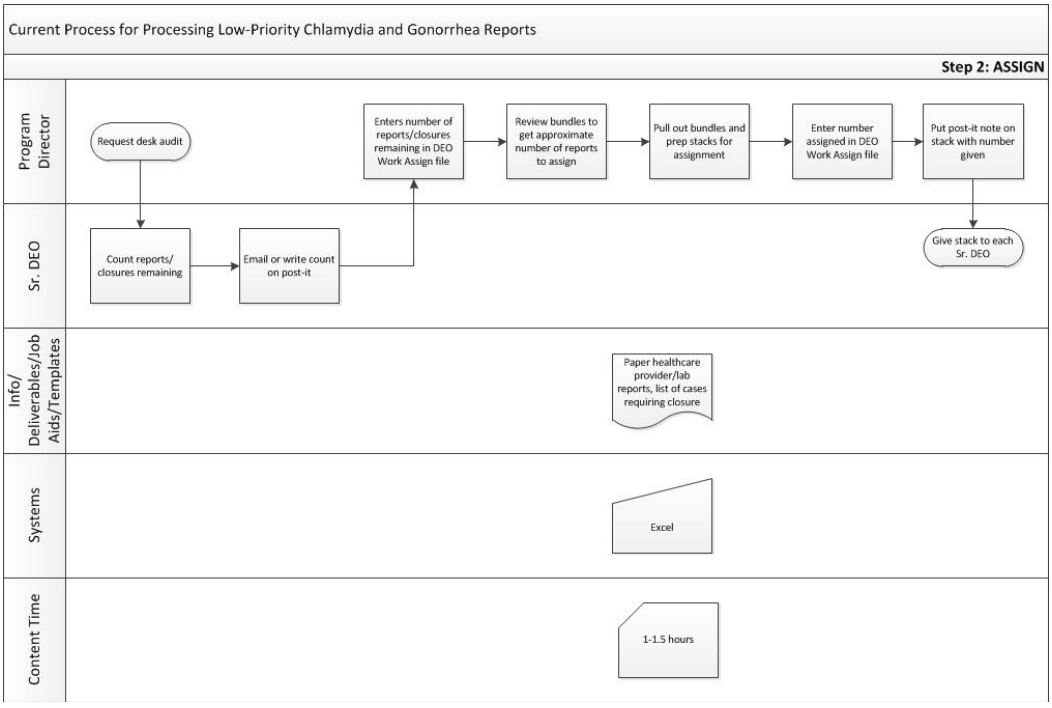
| What | Who | When |
|---|---|---|
| Time studies for types of reports (lab-new, update, duplicate; morbidity-new, update, duplicate; closure) | Kirsti Bocskay, Sandra Tilmon | 2/10/14 |
| Average number of low-priority GC and CT reports processed per day | Sandra Tilmon | 1/24/2014 |

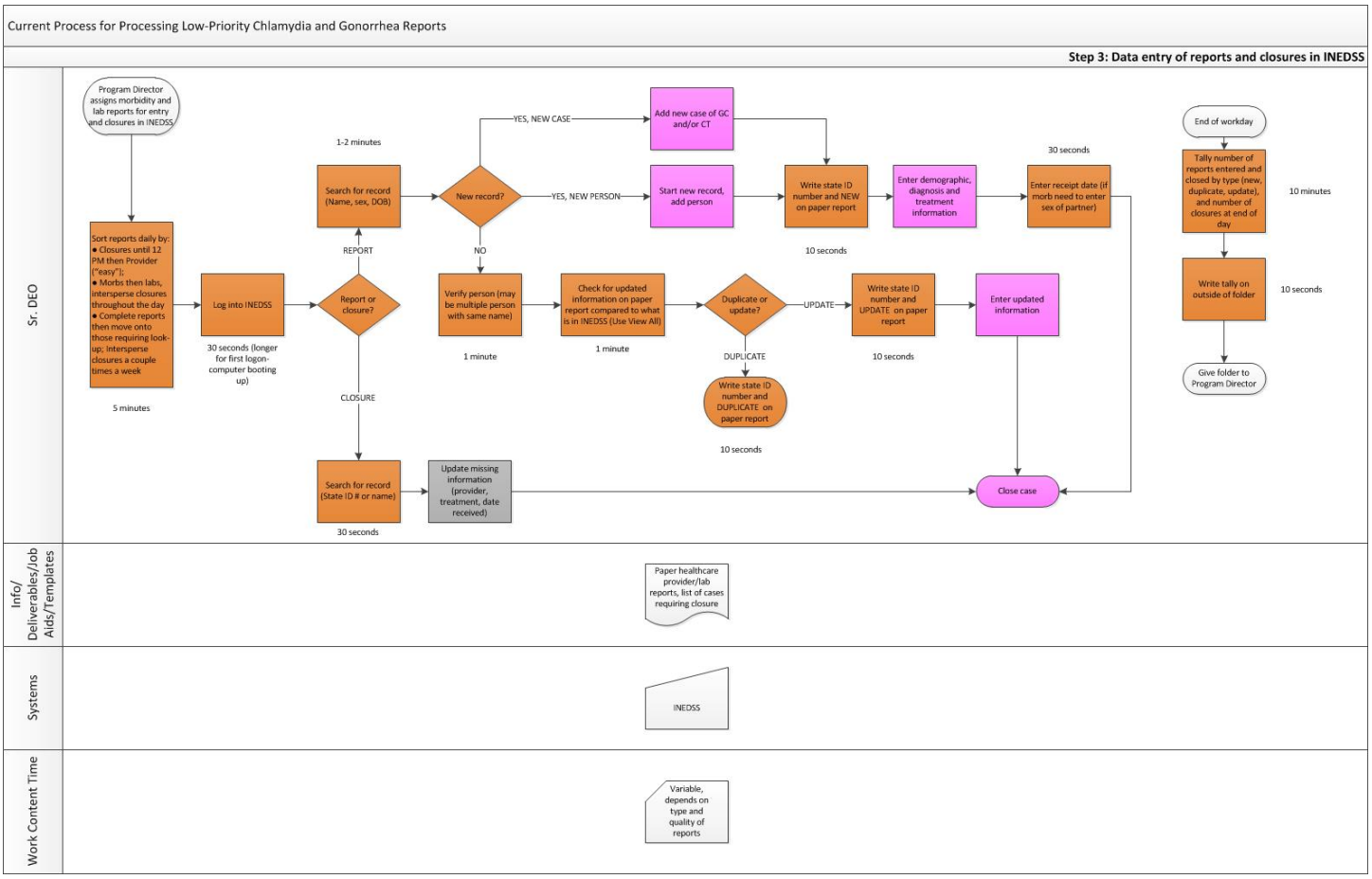
## 11b. Observe and Document Current Process (Generate a Process Map)



# PROJECT TEAM PROBLEM SOLVING






## 12. Conduct Cause and Effect Analysis (Priority issues and solutions from Cause and Effect Analysis)

| Issues/Wastes | Root Causes | Solutions or Additional CI Methods to use | Speed to Implement | Cost to Implement |
|---|---|---|---|---|
| Paper waiting time (morbidity and lab forms sitting in file drawer waiting to be entered into INEDSS) | • Batches are big<br>• Backlog<br>• "Easy" reports entered first, "harder" ones pushed back<br>• Being kicked back to Program Director or DIS<br>• Status quo of how work assigned | • Smaller batches<br>• Change how work assigned<br>• Eliminate backlog | Fast | Free |
| • Reading/writing<br>• Morbidity form not in order of INEDSS<br>• Extra information on morbidity form | • Form fields are too small<br>• No room for definitions on form<br>• Fitting everything for GC, CT and syphilis on 1 page<br>• For faxing purposes<br>• Only considered order for disease<br>• Trying to fit everything in open spaces on sheet<br>• Epidemiologists wanted 1 morbidity form<br>• Considered easier for providers<br>• Sr. DEO's not consulted when form created | Re-design morbidity form | Revision quick, vetting and rolling out slower | Free |

| Issues/Wastes | Root Causes | Solutions or Additional CI Methods to use | Speed to Implement | Cost to Implement |
|---|---|---|---|---|
| • Reading/writing<br>• Searching<br>  • For facility name in Google because not on lab form<br>  • Different lab forms | • Poor fax quality<br>• Filling out copy of a copy<br>• No feedback given to labs<br>• Poor handwriting<br>• Form fields too small<br>• Providers put different info in different places on form<br>• Provider field not on lab form<br>• Never communicated to labs<br>• New INEDSS requirement<br>• Different systems at labs | • Standardize lab form<br>• Electronic lab reporting (ELR)<br>• Communication tool for labs<br>• List of facilities/doctors<br>• Compile labs together from same facility | Quick to create standard form and cheat sheet; Others slower | Free |
| One third of reports are duplicates | • Provider sending 2 copies<br>• Error message on provider fax so re-send<br>• Fax machine busy so provider sending multiple times<br>• Paper labs and ELR<br>• Duplicate copies for DIS and Sr. DEOs but give both to Sr. DEOs | • Pulling out labs who report by ELR<br>• Reduce backlog so can "catch" duplicates<br>• Provider outreach/feedback | Fast | Free |
| Cases reopening in INEDSS after Sr. DEO's close | • DIS are merging ELR<br>• Stay on top of INEDSS merging so not re-opening (<30 days)<br>• Syphilis is priority so not getting done in 30 days | • Sr. DEO's merge<br>• Re-organize DIS workflow | Slow | Free |
| Re-enter case to fill in missing data | Multiple ways to review data in INEDSS | • Don't retract case unless necessary<br>• Sharing best practices | Fast | Free |

## 13. Improvement Hypothesis (Summary of potential means to achieve goal)

| Issue | Improvement | Expected Results |
|---|---|---|
| Morbidity and lab forms waiting to be entered into INEDSS | • Bundle reports into smaller batches<br>• Remove lab forms that already submitted via ELR<br>• Eliminate backlog | Decrease waiting time of reports, thereby reducing backlog time of reports |
| Information on morbidity forms is more than needed; Stopping to interpret handwriting/bad fax quality. | • Revise morbidity form to include only information needed for low-priority GC and CT and flow with INEDSS order<br>• Encourage providers to use INEDSS | Increase speed of data entry of morbidity forms, thereby decreasing backlog time |
| Searching for facility name because not included on lab form, and information in different places on lab form depending on lab; Stopping to interpret handwriting/bad fax quality. | • Creating provider and facility cheat sheet to minimize time spent googling;<br>• Create standardize lab form<br>• Compile labs from similar facilities when entering into INEDSS<br>• Encourage labs to use ELR | Decrease time spent entering lab forms, thereby decreasing backlog time |
| Cases being re-opened in INEDSS when DIS merge after being closed by Sr. DEOs. | Improve workflow process of merging and closures in INEDSS | Decrease time between merging and closing, thereby reducing backlog time |

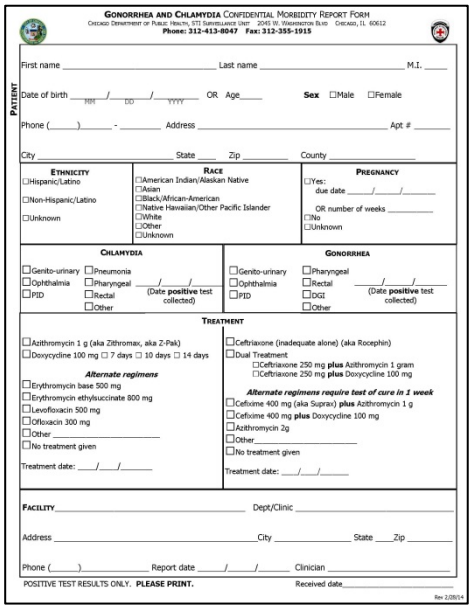
## TRY

### 14. Test Hypotheses (How will you test the potential solutions?)

| Tests | How | When | Who | Successful if… |
|---|---|---|---|---|
| Revised morbidity form | Develop new morbidity form (separate GC and CT from syphilis, remove unnecessary information and align with screens from INEDSS), transfer data from a sample of current forms and then test time for data entry | 2/27/14 | Karen, Alison, Joanne, Sandra, Kingsley, Karin, Kirsti | Time to enter data from revised morbidity form is less than for current form |
| Standardized lab form | Develop standardized lab form with facility name included as a field, transfer data from a sample of current forms and then test time for data entry | 2/27/14 | Karen, Alison, Joanne, Sandra, Kingsley, Karin, Kirsti | Time to enter data from standardized lab form is less than for current forms in use |
| Sorting and bundling of incoming reports | Sort and bundle 5 days of reports at a time, remove duplicates (paper lab reports and ELR), compile similar lab reports together | 2/27/14 | Kirsti, Jeanette | Sorting time per report is not increased with new method, significant amount of duplicates removed |
| Eliminate backlog | Using time studies, number of incoming reports data and tracking data, project backlog time of GC and CT reports from receipt to entry and closure in INEDSS if Sr. DEO's can start working in real time | 2/27/14 | Chris | Backlog time is less than 30 days |

*A "cheat sheet" of provider names, addresses phone numbers and facility was developed during the Kaizen Event, but its impact on data entry was unable to be tested during the Event. Several of the potential solutions were long term solutions (e.g. changing process of merging and closures in INEDSS, working with and encouraging providers to use INEDSS and labs to use ELR, providing feedback to providers and labs on quality of reporting, sharing best practices among Sr. DEOs) and unable to be addressed during the Event.*

### 15. Results: attach graph/table of actual trial performance



GONORRHEA AND CHLAMYDIA CONFIDENTIAL MORBIDITY REPORT FORM

CHICAGO DEPARTMENT OF PUBLIC HEALTH, 333 SOUTH STATE STREET, SUITE 200, CHICAGO, IL 60604
Phone: 312-413-8047 Fax: 312-355-1915

PATIENT

First name _____ Last name _____ M.I. ____

Date of birth ____/____/____ (MM DD YYYY) OR Age____ Sex ☐Male ☐Female

Phone (____)____-____ Address _____ Apt # _____

City _____ State ____ Zip _____ County _____

ETHNICITY
☐Hispanic/Latino
☐Non-Hispanic/Latino
☐Unknown

RACE
☐American Indian/Alaskan Native
☐Asian
☐Black/African-American
☐Native Hawaiian/Other Pacific Islander
☐White
☐Other
☐Unknown

PREGNANCY
☐Yes: due date ____/____/____
OR number of weeks _____
☐No
☐Unknown

CHLAMYDIA
☐Genito-urinary ☐Pneumonia
☐Ophthalmia ☐Pharyngeal
☐PID ☐Rectal
☐Other
____/____/____ (Date positive test collected)

GONORRHEA
☐Genito-urinary ☐Pharyngeal
☐Ophthalmia ☐Rectal
☐PID ☐DGI
☐Other
____/____/____ (Date positive test collected)

TREATMENT

☐Azithromycin 1 g (aka Zithromax, aka Z-Pak)
☐Doxycycline 100 mg ☐ 7 days ☐ 10 days ☐ 14 days

*Alternate regimens*
☐Erythromycin base 500 mg
☐Erythromycin ethylsuccinate 800 mg
☐Levofloxacin 500 mg
☐Ofloxacin 300 mg
☐Other _____
☐No treatment given
Treatment date: ____/____/____

☐Ceftriaxone (inadequate alone) (aka Rocephin)
☐Dual Treatment
☐Ceftriaxone 250 mg **plus** Azithromycin 1 gram
☐Ceftriaxone 250 mg **plus** Doxycycline 100 mg

*Alternate regimens require test of cure in 1 week*
☐Cefixime 400 mg (aka Suprax) **plus** Azithromycin 1 g
☐Cefixime 400 mg **plus** Doxycycline 100 mg
☐Azithromycin 2g
☐Other _____
☐No treatment given
Treatment date: ____/____/____

FACILITY _____ Dept/Clinic _____

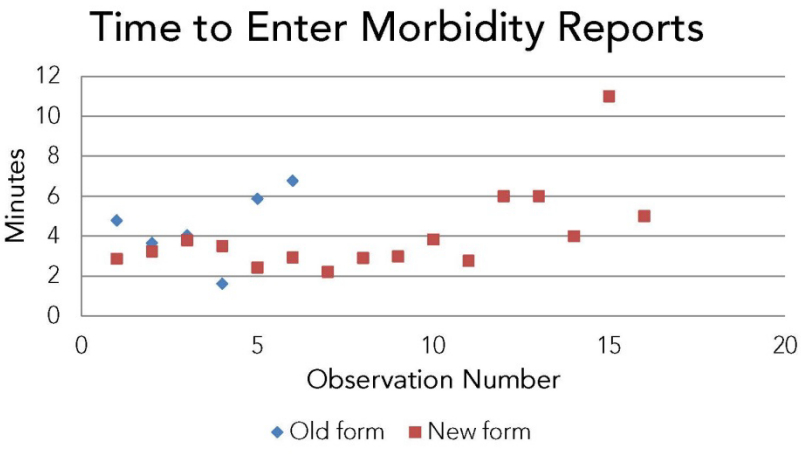
Address _____ City _____ State ____ Zip _____

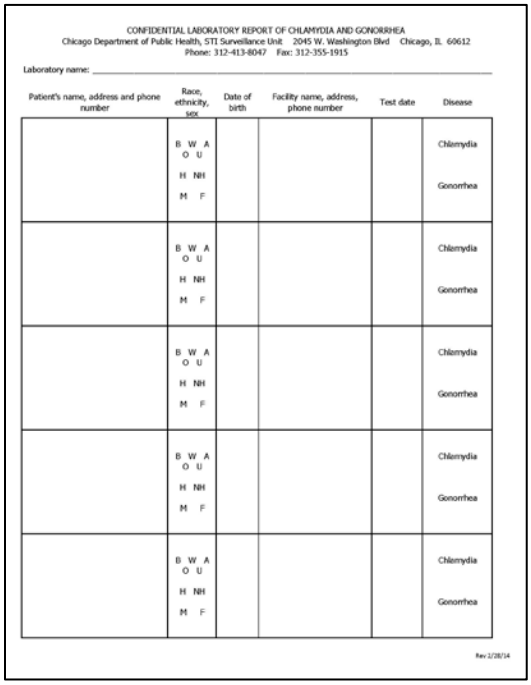
Phone (____)_____ Report date ____/____/____ Clinician _____

POSITIVE TEST RESULTS ONLY. **PLEASE PRINT.** Received date _____

Rev 2/28/14

**Revised Morbidity Form**
Average time to enter using old form: 4:23
Average time to enter using new form: 4:05
*Decrease of 18 seconds!*





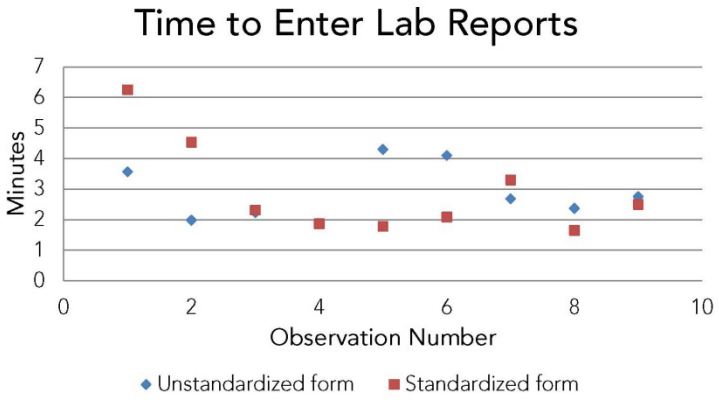
CONFIDENTIAL LABORATORY REPORT OF CHLAMYDIA AND GONORRHEA
Chicago Department of Public Health, STI Surveillance Unit 2045 W. Washington Blvd Chicago, IL 60612
Phone: 312-413-8047 Fax: 312-355-1915

Laboratory name: _____

| Patient's name, address and phone number | Race, ethnicity, sex | Date of birth | Facility name, address, phone number | Test date | Disease |
|---|---|---|---|---|---|
| | B W A O U H NH M F | | | | Chlamydia Gonorrhea |
| | B W A O U H NH M F | | | | Chlamydia Gonorrhea |
| | B W A O U H NH M F | | | | Chlamydia Gonorrhea |
| | B W A O U H NH M F | | | | Chlamydia Gonorrhea |
| | B W A O U H NH M F | | | | Chlamydia Gonorrhea |

Rev 2/28/14

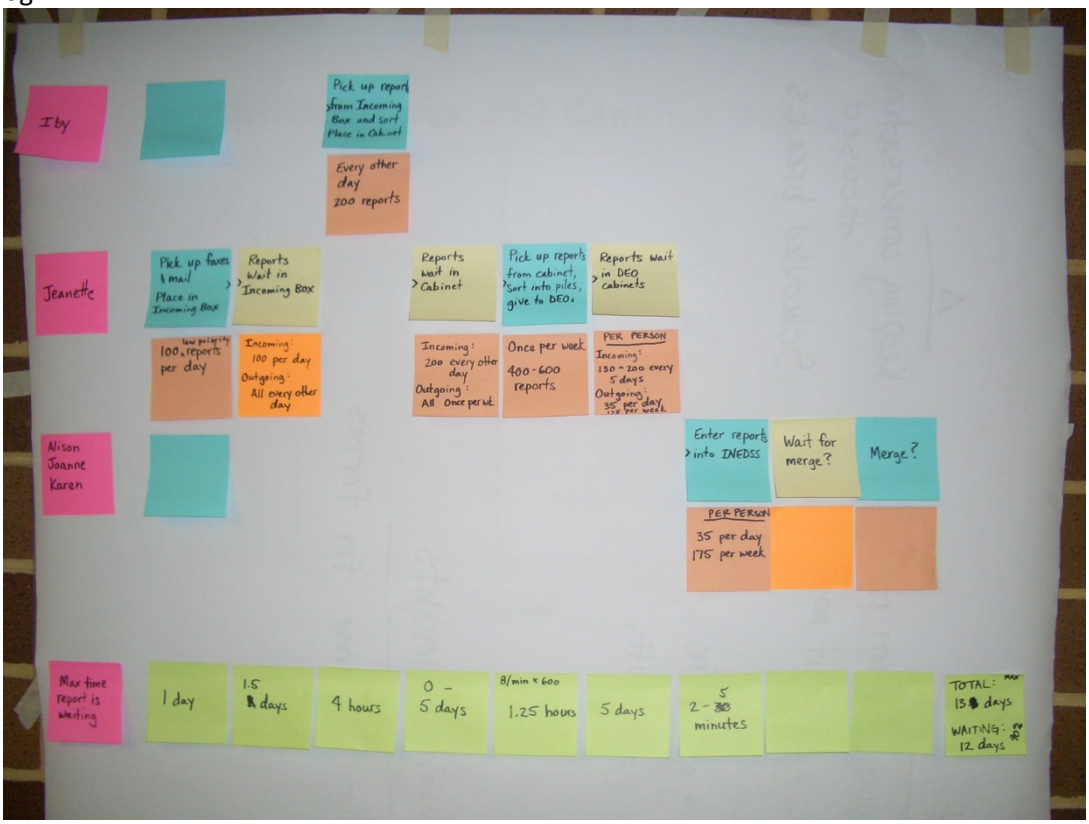
**Revised Laboratory Form**
Average time to enter using old form: 2:52
Average time to enter using new form: 2:38
*Decrease of 14 seconds!*




Sorting and bundling of incoming reports:

| Timepoint | Days in bundle | Rate of sorting *(pieces of paper/minute)* | Percentage of duplicates removed |
|---|---|---|---|
| Before improvement | Approximately 20 | 8 | 0% |
| After improvement | 5 | 8 | 13-36% |

Eliminate backlog:



## LEARN

16. Learning (For the trials, what worked and did not, why and what are you doing as a result? Is the result repeatable?)

| Reasons | Learning: Why? | Direction: Actions to be taken |
|---|---|---|
| Revised morbidity form reduced data entry time on average of 18 seconds per report | Form followed INEDSS windows/fields, only had necessary information so cleaner (more white space) | Get internal approval for revised form; pilot revised form with sample of providers; make additional revisions based on provider feedback and reporting with new form; Release new form to all providers. |
| Standardized lab form reduced data entry time on average of 14 seconds per report | Form had facility name as field so Sr. DEOs didn't have to search for facility name online; Since same form, didn't need to search for information, data in the same place | Get internal approval for standardized form; pilot standardized form with sample of labs; make additional revisions based on lab feedback and reporting with standardized form; Release new form to all labs. |
| Changes to the sorting and bundling processes of incoming reports did not increase the rate of process and removed a significant amount of duplicates | Bundling lab reports from the same labs and removing lab reports also submitted via ELR did not add a significant amount of time to the sorting and bundling process overall -- rate remained the same. | Begin sorting incoming reports in 5 days bundles, and distributing to Sr. DEOs in these smaller bundles. Impact of smaller but more frequent work assignments will be tracked by how long it takes Sr. DEO's are completing assigned work (and asking for more) and backlog time reductions. |
| By eliminating the backlog of morbidity and lab reports, backlog time can be reduced by 85% theoretically, based on time projections | Sr. DEOs are keeping up with the incoming low-priority GC and CT reports (see figure with 2013 reports incoming and processed). Backlog time will always be more than 30 days because of the perpetual backlog carried over year after year. | Have Sr. DEO's begin entering morbidity and lab reports from most recent 1-2 weeks on 2013 close-out is complete. Work with HIV/STI management to find a permanent solution to backlog (e.g., get volunteers, hire temporary help or utilize overtime/comp time to enter any older reports). |

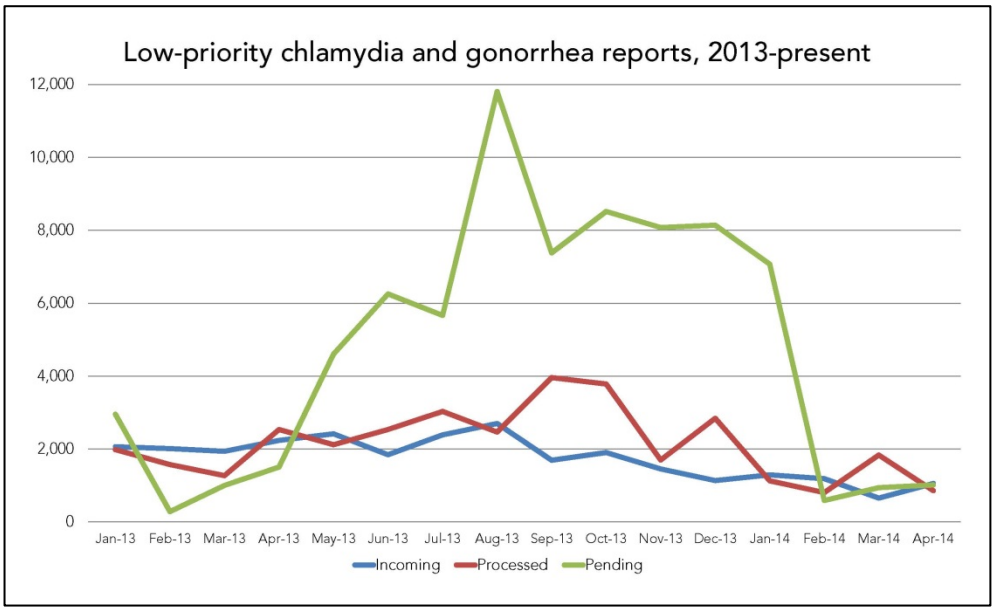
## INSTALL

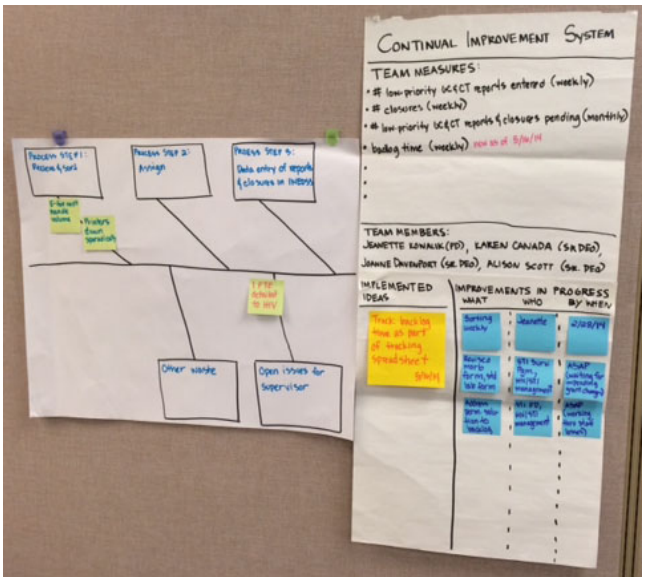
17. Installation Plan (Steps to operationalize the new process and make it stick. Attach new process map below.)

| What | Who | By When |
|---|---|---|
| Draft letter to labs and providers with proposed standardized lab form/revised morbidity form, best practices for reporting, recommendation for reporting via ELR and/or INEDSS | Jeanette Kowalik | 3/5/14 |
| Finalized standardized lab form | STI Surveillance Program, HIV/STI management | 3/5/14 |
| Revised morbidity form | STI Surveillance Program, HIV/STI management | 3/5/14 |
| Sharing best practices for data entry monthly during staff meetings, add to STI Surveillance Manual annually | Karen Canada, Joanne Davenport, Alison Scott, Jeanette Kowalik | Beginning April 2014 |
| Share Touch for quality tool at monthly staff meeting | Jeanette Kowalik | April 2014 staff meeting |
| Address issue of merging and closures program-wide by bringing together STI Surveillance Program at next QI Learning Collaborative (QILC) | STI Surveillance Program | April 2014 |
| Address issue of ongoing backlog by recruiting volunteers to help, allowing for | Jeanette Kowalik and HIV/STI management | 3/22/14 |

| What | Who | By When |
|---|---|---|
| Sr. DEOs to begin working in real-time after March 21 deadline. | | |
| Identifying legal and/or regulatory impacts of changes to morbidity form | Jeanette Kowalik | 3/5/14 |
| Schedule a call with IDPH to discuss ideas that came up during Kaizen Event for improvements to INEDSS | Jeanette Kowalik | 4/15/14 |
| Evaluate impact of improvements | Jeanette Kowalik, Kirsti Bocskay, Karen Canada, Joanne Davenport, Alison Scott | May 2014 |
| Implement Continual Improvement System | Jeanette Kowalik | Begin 3/7/14 |

## 18. Measure Success attach graph/table of installed performance




Since the event:

- Backlog time has been reduced by 10% to 77 days as of 5/16/14.
- Revised morbidity form and standardized lab form as well as best practices for reporting will be shared at annual CDPH Infection Control Conference.
- STI Surveillance Program is participating in QILC to address merging and closure issue.
- Initial solution to address backlog (volunteers) was abandoned due to loss of staff, HIV/STI management still working on finding permanent solution.